

## CLAIMS

1. A PWM cycloconverter including an AC power source in which  
phases are connected directly to phases of the output side  
5 thereof by means of a bi-directional switch having  
self-arc-extinguishing capability, wherein an AC power source  
voltage is PWM-controlled in response to an output voltage  
command to output variable voltage having variable frequency,  
the PWM cycloconverter comprising:

10 an input current detecting means for detecting one or more  
input current of the PWM cycloconverter; and  
a PWM converter connected to a DC voltage means, wherein  
an output unit of the PWM converter is connected to a place  
before an input filter of the PWM cycloconverter to keep down  
15 resonance of the input filter on the basis of an input current  
signal detected by means of the input current detecting means.

2. The PWM cycloconverter according to Claim 1, further  
comprising:

20 one or more voltage clamping device provided with a diode  
rectifier connected to an input terminal of a semiconductor  
device for electric power of the PWM cycloconverter and with  
a smoothing capacitor; and  
a voltage detecting device for detecting voltage at the  
25 both ends of the smoothing capacitor, wherein

the capacitor for clamping voltage is used for the DC voltage means.

3. The PWM cycloconverter according to Claim 1, further  
5 comprising:

a snubber formed from a diode connected to an input terminal of a semiconductor device for electric power of the PWM cycloconverter and from a capacitor; and

10 a snubber voltage detecting device for detecting voltage at the both ends of the smoothing capacitor connected to the snubber, wherein

the capacitor for the snubber is used for the DC voltage means.